

MAKING CONNECTIONS

**ACTIONS TO IMPROVE WALKING,
BICYCLING, AND ROLLING IN TENNESSEE**



DRAFT

**STATEWIDE ACTIVE TRANSPORTATION PLAN
MARCH 2021**



COVER PHOTOS: NASHVILLE, KNOXVILLE, AND MEMPHIS, TN



SUMNER COUNTY, TN

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WHITE HOUSE, TN

1 Let's do this.

1.1. PLAN PURPOSE

Tennessee's *Statewide Active Transportation Plan* is about action. It is the first plan focused on improving walking, bicycling, and rolling (i.e., personal mobility devices) in Tennessee since 2005. With growth occurring across the state, the time has never been better for the Tennessee Department of Transportation (TDOT) to define a vision for active transportation and draw a map for how to get there.

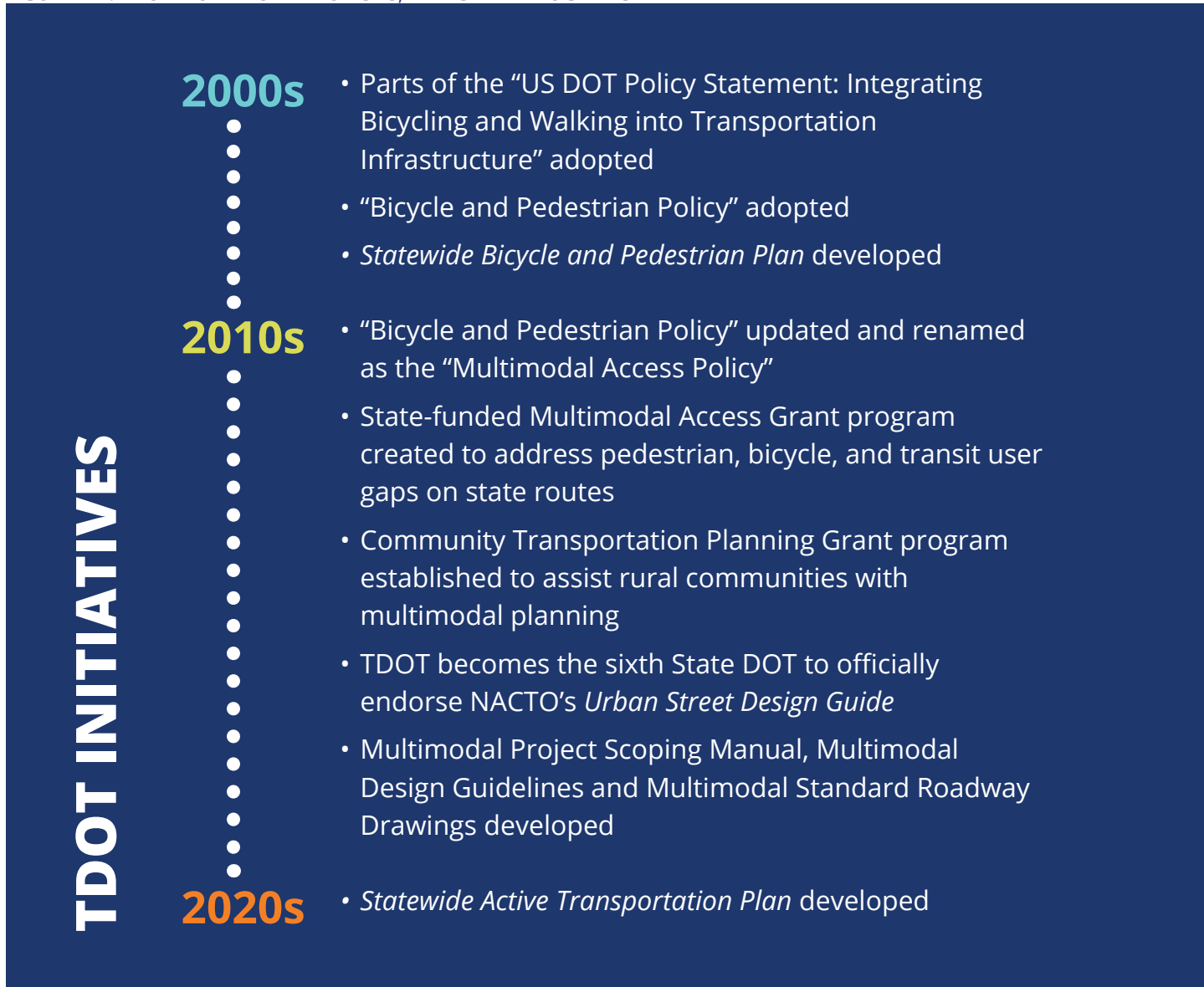
What makes this plan unique is its emphasis on concrete implementation steps—or, what we need to do to build great walkable and bikeable communities already captured in so many planning efforts across Tennessee. Over the past two decades, TDOT has adapted its policies, programs, and projects to better meet the needs of all transportation system users, particularly pedestrians and bicyclists of all ages and abilities (Figure 1-1). The opportunity today is to match plans and policies with action. Importantly, this plan:

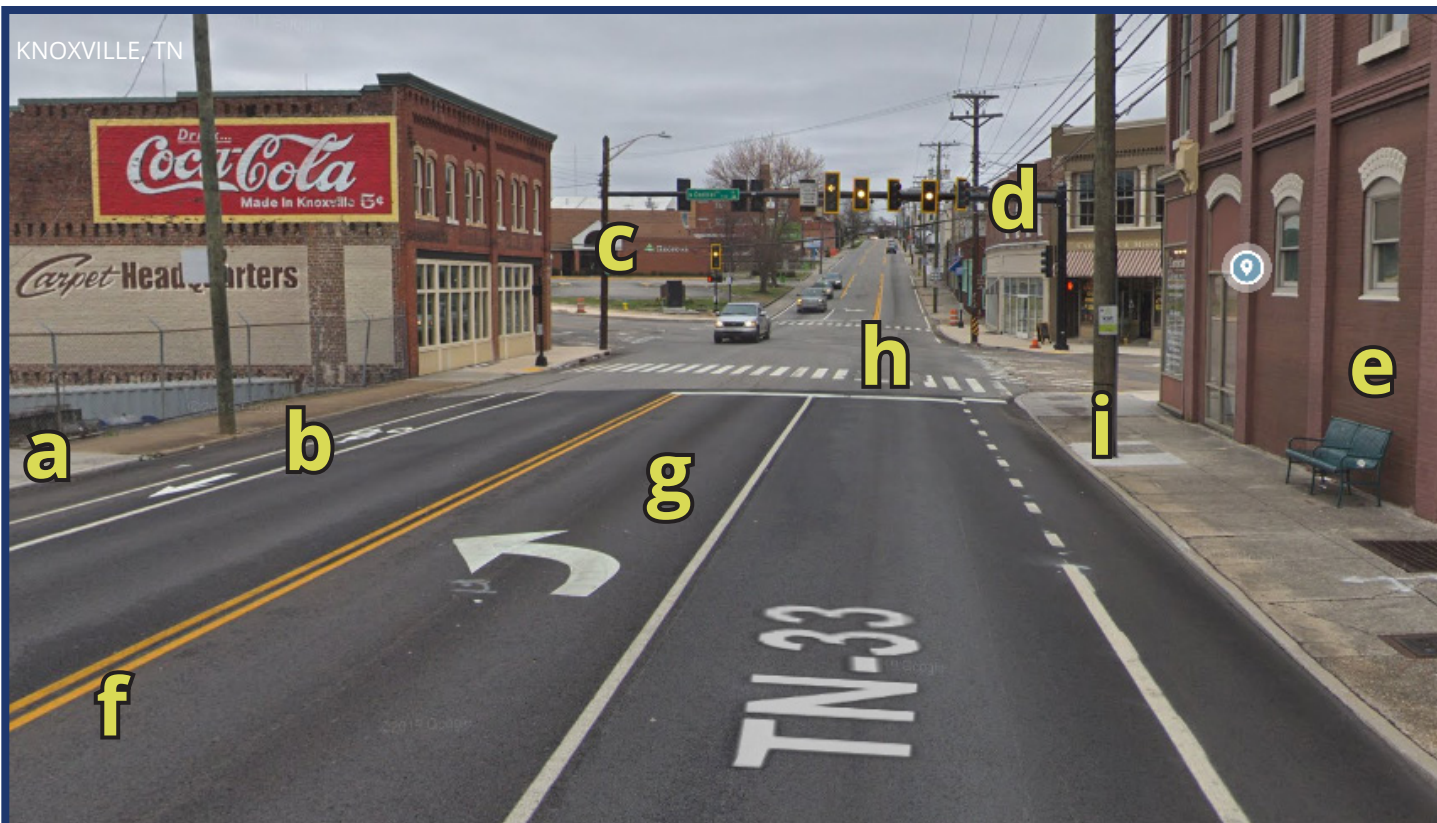
- Establishes a collaborative long-term vision;
- Identifies goals and strategies for achieving the vision; and
- Calls on TDOT, its partners, and all stakeholders to take action through specific steps.

Furthermore, the plan proposes performance measures to ensure the state and its partners are making progress towards the vision and goals.

TDOT recognizes it will require a team effort—including local and regional agencies, residents and businesses, and advocacy groups—to make transportation safer and more equitable for everyone throughout the state. Many of Tennessee’s regional planning organizations and larger cities are leading the way in improving walking and bicycling conditions through unique planning tools, innovative infrastructure designs, and detailed performance tracking. The *Statewide Active Transportation Plan* recommends additional steps to increase coordination between TDOT and local stakeholders in communities of all sizes.

FIGURE 1-1. TDOT MULTIMODAL POLICIES, PLANS AND PROGRAMS





WORKING TOGETHER TO MAKE GREAT PLACES

While streets provide access and mobility for people and goods, they mean much more for the cities, towns, and counties they pass through. Streets and sidewalks are often a community's greatest public asset, representing the largest amount of public space. Making great streets and great places depends on countless decisions involving everyone from local governments and property owners to utility companies, transit providers, and state agencies. Each decision affecting the public right-of-way or public realm impacts how we experience a community whether we are driving, walking, bicycling, or rolling. Buildings close to the street frame the public realm, inviting people to stop and visit. Sidewalks and bikeways allow people easy access to destinations by transit or without a car. Lighting, especially when pedestrian scaled, improves the overall safety and character of the area. A street's ultimate test is whether future generations are able to say it has "good bones"—it is a safe, comfortable, and convenient place to live, work, shop, and learn.

a	Sidewalks	TDOT constructs. Municipality maintains.
b	Bike Lanes	TDOT constructs and maintains.
c	Lighting	Municipality
d	Traffic + Pedestrian Signals	TDOT constructs. Municipality maintains.
e	Building Location	Municipality
f	Resurfacing + Striping	TDOT
g	Speed Limit	TDOT establishes. Municipality may lower.
h	Crosswalks	TDOT constructs and maintains.
i	Bus Stops + Shelters	Public Transit Agency

WHAT IS ACTIVE TRANSPORTATION?

HUMAN-POWERED and/or HUMAN-SCALED MODES OF TRANSPORTATION



WALKING

BICYCLING

ROLLING*

*PERSONAL MOBILITY DEVICES, SCOOTERS, SKATEBOARDS, ETC.

**IT IS THE WALKWAYS, BIKEWAYS, AND PATHS
THAT KNIT OUR COMMUNITIES TOGETHER.**

1.2. PLAN PROCESS

The planning process for the *Statewide Active Transportation Plan* occurred over an 18-month period and relied on three main sources of input:

- Public, stakeholder, and internal engagement;
- Existing state, regional, and local policies, plans, guidelines, and standards; and
- An analysis of existing walking and bicycling conditions and trends in Tennessee.

Due to the COVID-19 pandemic, public and stakeholder engagement relied almost exclusively on a variety of virtual platforms, including websites, online surveys and mapping tools, and video meetings. Over the course of the planning process:

- More than 1,300 online surveys were completed;
- More than 350 comments were collected through an online, interactive map and at the virtual statewide bicycle and pedestrian conference; and
- More than 120 state, regional, and local government agency staff participated in the plan's development, including nine regional listening sessions.

A number of prior state planning documents, including the *Statewide Bicycle and Pedestrian Plan* (2005), the 2011 *Update of the State Bicycle Route Plan*, and the *25-Year Transportation Policy Plan* (2016), provided the framework for the *Statewide Active Transportation Plan*. Additionally, communities across Tennessee continue to plan new bicycle and pedestrian infrastructure. Thirty-six regional and local bicycle and pedestrian plans were reviewed during the planning process—nearly all emphasized accessibility, connectivity, and safety as principal goals.

Indeed, accessibility, connectivity, and safety are the hallmark of an efficient and effective transportation system and especially important for pedestrians, bicyclists, and individuals using personal mobility devices. Notably, the existing conditions and trends analysis found that **pedestrian and bicyclist fatalities account for nearly 15%, or one in seven, of Tennessee’s annual traffic fatalities with pedestrian crashes experiencing a steady increase since 2015.** The *Statewide Active Transportation Plan* seeks to bridge the gap between today’s conditions and a long-term vision for safe and accessible walking, bicycling, and rolling in Tennessee.

FIGURE 1-2. SURVIVAL RATES FOR PEDESTRIANS IN A VEHICULAR CRASH, USDOT



1.3. PLAN OVERVIEW

The opportunity to build stronger communities through active transportation investments can be found in and between cities and towns across Tennessee. The *Statewide Active Transportation Plan* provides a roadmap for doing so—and how to move past longstanding barriers, both large and small. In particular, the plan addresses three important questions that will help Tennessee routinely put in place the building blocks of safe and vibrant communities—the walkways, bikeways, and paths that tie us all together.

- **Where Are We Going?** The vision, goals, and performance measures for active transportation in Tennessee
- **How Do We Get There?** The key strategies and actions to achieve the vision and goals
- **How Will We Make It Happen?** The process for developing and funding active transportation projects

Building—or rebuilding, in many cases—transportation infrastructure in a community takes time and requires the participation, patience, and commitment of countless stakeholders, from local government leaders, property owners, and residents to State transportation officials and regional planning organizations. Discussed in greater detail throughout the plan, the recommendations highlight priority strategies and actions that can be implemented in the next five years and help streamline and accelerate active transportation improvements. Similarly, the plan’s implementation should be evaluated on an annual basis using the recommended performance measures, and the plan itself should be reviewed on a regular five-year cycle.

In addition to the roadmap described in the following pages, it is worth noting that the *Statewide Active Transportation Plan* includes two supporting technical memorandums documenting the existing conditions and trends analysis and the public and stakeholder engagement.

MANCHESTER, TN





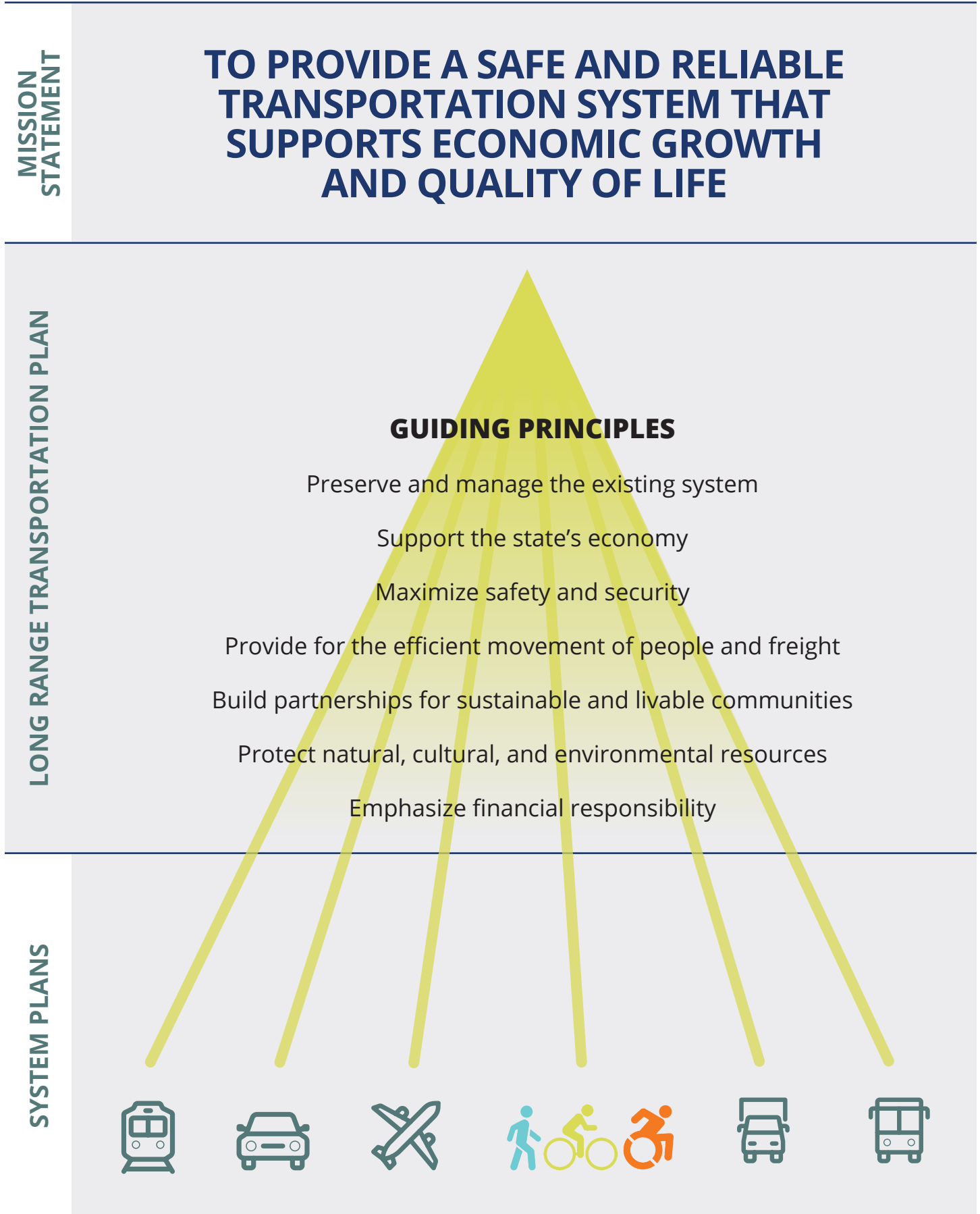
2 Where are we going?

2.1. TENNESSEE'S TRANSPORTATION SYSTEM

Delivering better transportation infrastructure and providing more transportation services in Tennessee depends on a strong working partnership among state, regional, and local agencies and regular communications with community stakeholders and the general public.

The state highway system, which is the focus of this plan, consists of more than 12,600 miles and touches nearly every community. Additionally, TDOT plays an active role, either directly or indirectly, in the aviation, rail, transit, and waterway systems stretching across Tennessee. TDOT's mission statement balances the competing—and often growing—needs of a multimodal transportation system with an emphasis on economic development and quality of life. It also establishes the overall goals—safety and reliability—for the individual transportation systems and plans, including the *Statewide Active Transportation Plan* (Figure 2-1).

FIGURE 2-1. TENNESSEE DEPARTMENT OF TRANSPORTATION MISSION STATEMENT





COOKEVILLE, TN

2.2. TDOT MULTIMODAL ACCESS POLICY

TDOT's commitment to evaluating pedestrian and bicyclist needs in all projects and programs began in 2003 when the department adopted parts of, "A U.S. Department of Transportation Policy Statement: Integrating Bicycling and Walking into Transportation Infrastructure" (2000). Since then, TDOT has revised its bicycle and pedestrian policy periodically, expanding the scope of the statement to address multimodal transportation more broadly. In 2015, TDOT updated the language of its new "Multimodal Access Policy." The policy promotes:

- "[I]nclusion of multimodal accommodations in all transportation planning and project development activities at the local, regional, and state levels, and to develop a comprehensive, integrated, and connected multimodal transportation network;" and
- "[A] multimodal transportation policy that encourages safe access and mobility for users of all ages and abilities through the planning, design, construction, maintenance, and operation of new construction, reconstruction, and retrofit transportation facilities that are federally or state funded. Users include, but are not limited to, motorists, transit-riders, freight-carriers, bicyclists and pedestrians."

2.3. ACTIVE TRANSPORTATION VISION + GOALS

Building on the mission statement, multimodal policy, and guidance from more than 1,600 plan comments, the following vision for active transportation defines what TDOT wants to achieve with its partners and communities across the state.

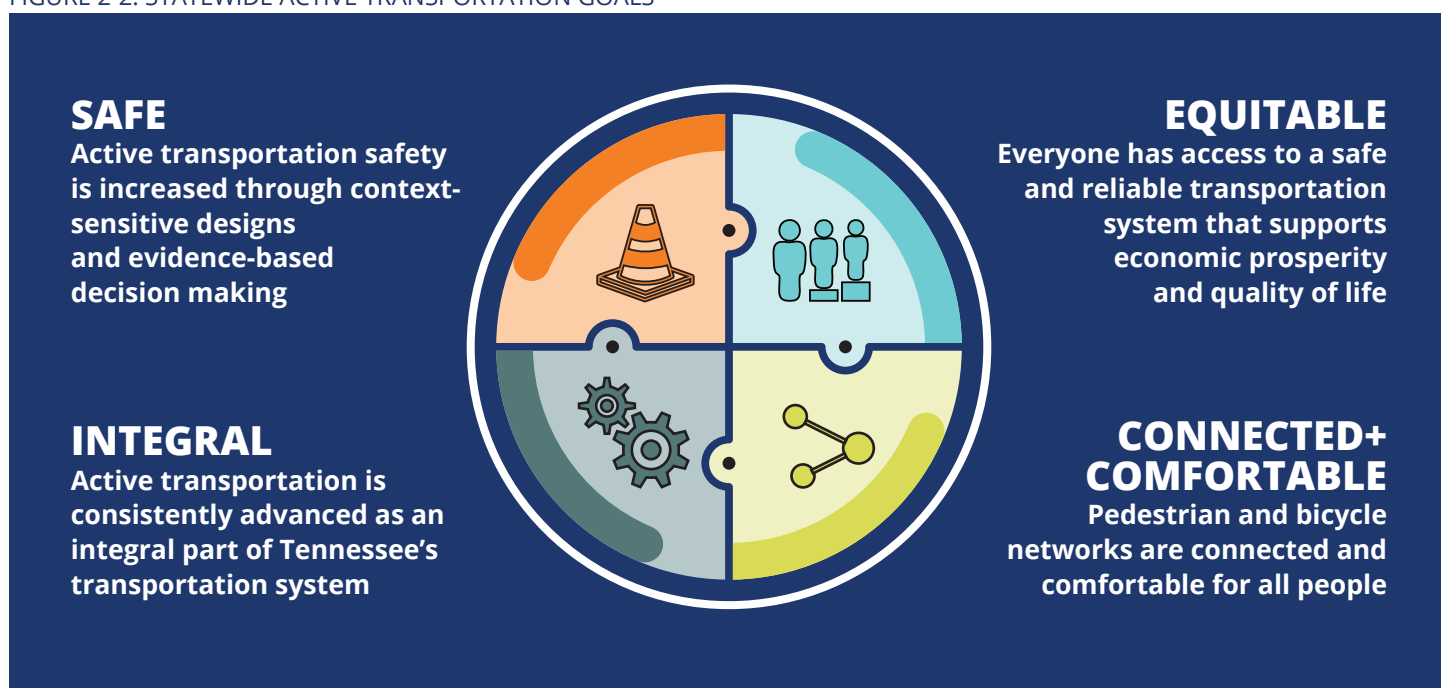
VISION STATEMENT

IN TENNESSEE, EVERYONE CAN WALK, BICYCLE, OR ROLL TO THE PLACES THEY NEED TO GO USING A SAFE AND RELIABLE TRANSPORTATION SYSTEM.

The vision statement is a touchstone, a desired long-range outcome that should inform and shape each individual planning, design, construction, maintenance, and operating decision. As defined, the vision for active transportation highlights the importance of understanding where people of all ages and abilities—“everyone”—need to travel and then taking the steps necessary to make those routes safe for routine trips.

Achieving a vision statement requires first establishing a set of actionable and measurable goals. For the *Statewide Active Transportation Plan*, the goals in Figure 2-2 depict what success looks like in greater detail. The transportation system will benefit all pedestrians, bicyclists, and individuals

FIGURE 2-2. STATEWIDE ACTIVE TRANSPORTATION GOALS



using personal mobility devices when it is safe, equitable, integral, and connected and comfortable.

While the vision and goals focus on the safety and quality of any given trip, they also underscore how each planning decision and transportation improvement plays a pivotal role in a community's economic competitiveness. Is the transportation system safe, connected, and comfortable for residents, businesses, and visitors alike? Are people more likely to stay and return? And, what steps can we all take to maximize each transportation investment? The next section identifies a series of performance measures that can help answer these questions and track progress toward achieving the plan's vision and goals.


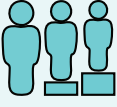


2.4. PERFORMANCE MEASURES

Performance measures are an important tool for understanding how the transportation system operates, while providing a way to carefully plan and prioritize transportation investments. To be effective, performance measures should be routinely monitored, reported, and updated over the course of the plan's life. This will allow TDOT, its partners, and stakeholders to gauge progress toward a goal and know when and where additional efforts are needed.

The safety goal and its metrics (Table 2-1) illustrate the value of tracking performance. Working with federal, state, regional, and local partners, TDOT currently monitors and reports on the number of non-motorized fatalities and serious injuries. **During the latest reporting period, the rolling five-year average increased to an annual figure of 495 fatalities and serious injuries—with an average annual increase of 8.3% between 2014 and 2018.** A number of initiatives are already underway at TDOT and across the state to combat the increase in non-motorized fatalities and serious injuries, including the *Tennessee Strategic Highway Safety Plan*. The active transportation goals, strategies, and actions aim to build on and complement existing efforts.

Although the performance measures are tied to specific goals, in practice, they are interrelated and work in concert with one another. Providing complete and connected pedestrian and bicycle networks in a community, for example, will result in a safer, more equitable, and more comfortable transportation system for everyone. Finally, performance measures inevitably rely on available data, and as a consequence, present a partial picture and snapshot in time. The potential performance measures in Table 2-1 begin the process of providing a clear picture of active transportation in Tennessee but will change as new data and tools become available.

TABLE 2-1. POTENTIAL ACTIVE TRANSPORTATION PERFORMANCE MEASURES

GOAL	PERFORMANCE MEASURE OBJECTIVE	POTENTIAL PERFORMANCE MEASURES
 SAFE	Provide a transportation system free of fatalities through a sustained and accelerated decline in transportation related deaths and injuries.	Number of pedestrian and bicyclist fatalities and serious injuries (annual and 5-year average)
		Pedestrian and bicyclist fatality and serious injury per capita (annual and 5-year average)
 EQUITABLE	Increase safe access to economic opportunities and public services by improving walking, bicycling, rolling, and transit connections for historically underserved communities.	Number of pedestrian and bicyclist fatalities and serious injuries in areas with high equity scores (annual and 5-year average)
		Per capita pedestrian and bicycle project funding in areas with high equity scores (annual and 5-year average)
		Percentage of transportation planning and design projects using equity-focused public engagement techniques
		Percentage of curb ramps on state routes compliant with ADA requirements
 INTEGRAL	Expand active transportation networks through planning, design, operating, and maintenance policies and project implementation.	Percentage of urban state routes (non-freeway) with sidewalks or shared use paths on at least one side of the street
		Percentage of urban state routes (non-freeway) with bikeways or shared use paths
		Percentage of rural state bike routes with paved shoulders (min. 4 feet)
		Number of eligible roadway projects granted Multimodal Access Policy design exceptions (annual and 5-year average)
 CONNECTED+ COMFORTABLE	Deliver connected active transportation networks that can be used safely and comfortably by people of all ages and abilities and for the full range of trips.	Average Level of Traffic Stress on state routes within municipal boundaries – Pedestrians
		Average Level of Traffic Stress on state routes within municipal boundaries – Bicyclists
		Pedestrian commuting mode share (annual and 5-year average)
		Bicycle commuting mode share (annual and 5-year average)
		Percentage of MPOs, counties, and municipalities with active transportation plans



JACKSON, TN

MULTIMODAL PRIORITIZATION TOOL

TDOT has developed a tool to measure the potential benefit of pedestrian and bicycle projects on state routes. The tool scores roadway segments based on existing bicycle and pedestrian conditions, such as safety, equity, and bicycle and pedestrian demand, and existing roadway conditions, including existing multimodal infrastructure, posted speed limits, and traffic volumes.

The output from the tool is a Multimodal Prioritization Index, and various TDOT divisions and offices are using it to analyze projects and programs, including grant applications and transportation plans. As the tool evolves, it can help measure progress in achieving the *Statewide Active Transportation Plan's* goals.

WHAT DO WE MEAN BY “COMFORTABLE”?

Today, pedestrian and bicycle planning focuses on providing walkways and bikeways that meet the needs of people of all ages and abilities. In order to better understand how an existing environment is perceived, a pedestrian and bicycle level of traffic stress (LTS) analysis measures how stressful – or, alternatively, comfortable – a street network is for different people. LTS is a rating given to a road segment indicating the traffic stress experienced by pedestrians and bicyclists. Depending on available data, an LTS analysis typically includes:

- Posted or prevailing speed limit;
- Number of travel lanes;
- Annual average daily traffic (AADT) volumes;
- Presence and character of walkways and bikeways;
- Street functional classification; and
- Land use.



SMYRNA, TN



KINGSPORT, TN



MEMPHIS, TN

3 How do we get there?

Goals describe what we want to achieve—outcomes. Strategies and actions explain how we will achieve them.

Figure 3-1 illustrates the relationship between the plan's vision for active transportation and its goals, strategies, and actions. As the figure indicates, tying together the plan's elements are a series of metrics—the performance measures discussed in the previous section. While the goals and performance measures can be achieved in any number of ways, the recommended strategies reflect opportunities to improve active transportation identified during the planning process. The actions reported here represent specific activities to pursue in the near-term or next five years.

FIGURE 3-1. ACTIVE TRANSPORTATION VISION, GOALS, STRATEGIES AND ACTIONS



3.1. INCREASING SAFETY

Between 2015 and 2019, there were 6,648 vehicle crashes reported involving a pedestrian and 2,098 involving a bicyclist in Tennessee. Of these, 43% were on state roadways, including 55% of total severe crashes. **On state routes, almost all pedestrian (88%) and bicycle (90%) crashes occurred on streets classified as urban arterial highways, and over half (55%) of the pedestrian and bicycle crashes took place within a posted speed zone of 40 or 45 miles per hour.** As noted earlier, pedestrian and bicyclist fatalities accounted for nearly 15%, or one in seven, of the state's overall annual traffic fatalities.

Crash history is one way of understanding pedestrian and bicyclist safety. Increasingly, however, states and communities are taking a more proactive and systemic approach to plan and improve pedestrian and bicycle networks that are safe and connected for people of all ages and abilities—similar to the street network for motorists. During the planning process, stakeholders—public agencies and individuals—identified three common and basic barriers to safe walking and bicycling:

- Lack of facilities;
- Gaps in facilities; and
- Motor vehicle speeds.

Similarly, stakeholders stressed the importance of providing greater separation between vehicle traffic and walkways and bikeways to address concerns about safety. The strategies and actions outlined in Table 3-1 will make it safer to walk and bicycle in Tennessee by integrating bicycle and pedestrian policies, guidelines, and standards in all transportation plans, projects, and programs, while simultaneously looking for opportunities to meet more immediate and lower-cost needs through quick-build improvements and complete street projects.

MEMPHIS, TN





TABLE 3-1. SAFETY STRATEGIES AND ACTIONS

GOAL	Active transportation safety is increased through context-sensitive designs and evidence-based decision making.
STRATEGIES	S1. Plan, design, operate, and maintain safe corridors for all users. S2. Prioritize locations with high-risk roadway features related to severe crash types.
ACTIONS	A. Develop more detailed policies, guidelines, and standards to include pedestrians, bicyclists, and other low-speed users across all project types and land use contexts (urban, suburban, rural), as well as policies and procedures for maintaining infrastructure. B. Establish a standard set of multimodal measures to evaluate different options in all planning studies (e.g., consistency with local plans and public input, level of traffic stress, accessibility, and safety). C. Create a quick-build program to implement safety countermeasures at high-crash locations for pedestrians, bicyclists, and other low-speed users. D. Establish a Complete Streets program that develops projects for TDOT's 3-year work program.
PERFORMANCE MEASURES	<ul style="list-style-type: none">• Number of pedestrian and bicyclist fatalities and serious injuries (annual and 5-year average)• Pedestrian and bicyclist fatality and serious injury per capita (annual and 5-year average)

3.2. ADVANCING EQUITY

As TDOT's mission statement underscores, a key objective for many transportation agencies is linking individuals and businesses to economic opportunities and improving a community's quality of life more generally. The *Statewide Active Transportation Plan's* equity goal builds on the mission statement by asking:

- Does the transportation system provide access to safe and affordable transportation options for everyone—especially historically underserved populations?

Historically underserved populations include individuals in one or often more of the following categories—low income, minority, limited English proficiency, or persons with disabilities—who face long standing structural and institutional barriers to opportunity. **In Tennessee, 17% of households live in poverty, 23% of the population is minority, and 31% of households have at least one person living with a disability.** Historically underserved populations can be found in rural areas, small towns, and large cities, and for many people, access to safe and convenient walkways and bikeways means access to basic resources and services such as food, health care, education, transit, and employment.

Importantly, TDOT has a number of planning and grant programs aimed at improving local transportation options, including the Community Transportation Planning, Multimodal Access, and Transportation Alternatives grants. And, the department has expanded its public engagement efforts to involve a more diverse a range of voices in planning and project development processes. Still, stakeholders indicated that TDOT needs to develop additional strategies to engage communities in projects and available programs, particularly historically underserved and communities with limited resources and less experience pursuing state or federally funded projects. When implemented, the strategies and actions in Table 3-2 will help increase participation in transportation programs and projects by working more closely with communities to understand their specific needs.

CLEVELAND, TN



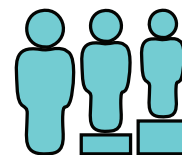


TABLE 3-2. EQUITY STRATEGIES AND ACTIONS

GOAL	Everyone has access to a safe and reliable transportation system that supports economic prosperity and quality of life.
STRATEGIES	<p>E1. Support historically underserved communities through transportation investments.</p> <p>E2. Update and expand public engagement processes.</p> <p>E3. Provide local guidance and technical support for planning, design, and grant management.</p>
ACTIONS	<p>A. Prioritize historically underserved community needs during project development and project selection.</p> <p>B. Update existing public engagement techniques that increase participation by historically underserved communities.</p> <p>C. Ensure local communities have access to technical assistance for grants, projects, and contracts in each region.</p>
PERFORMANCE MEASURES	<ul style="list-style-type: none"> • Number of pedestrian and bicyclist fatalities and serious injuries in areas with high equity scores (annual and 5-year average) • Percentage of curb ramps on state routes compliant with ADA/PROWAG requirements

3.3. ENSURING INTEGRATION

Focusing initially on national highways and then interstates, federal and state transportation systems largely developed around the movement of motor vehicles and the experience of one kind of traveler—motorists—in more rural areas between cities and in urban areas. Fast forward a half century and with the growth of metropolitan regions, transportation agencies at all levels have been asked to respond to a new set of community needs and adopt policies and strategies that reflect a much more dynamic, fluid, and urban environment. What does it mean to plan, design, build, maintain, and operate a multimodal system that is part and parcel of the places where we live and work today? The changes affect every facet of a transportation agency’s work, from data collection and analysis to design guidance and staff development.

Integrating transportation systems for all travelers also means creating seamless connections among local, regional, and statewide active transportation networks. **Throughout the planning process, TDOT’s transportation partners expressed a strong desire to improve coordination across all phases of pedestrian and bicycle planning and design along state routes as well as operations and maintenance.** This includes utilizing local and regional plans to help shape the location and design of infrastructure. The strategies and actions in Table 3-3 take the policies and programs developed by TDOT over the past ten years and highlight the steps needed to write the next chapter of multimodal transportation in Tennessee.

KNOXVILLE, TN





TABLE 3-3. INTEGRAL STRATEGIES AND ACTIONS

GOAL	Active transportation is consistently advanced as an integral part of Tennessee’s transportation system.
STRATEGIES	<ul style="list-style-type: none"> I1. Evaluate system performance. I2. Support communities with limited resources through grant opportunities. I3. Understand where people walk and bicycle. I4. Coordinate closely at project milestones. I5. Share data across agencies. I6. Support ongoing and advanced education and training.
ACTIONS	<ul style="list-style-type: none"> A. Identify additional performance measures and metrics for monitoring how well the state highway system is meeting multimodal user needs and/or impacting user safety. B. Remove grant barriers for communities with limited resources. C. Gather and report detailed multimodal infrastructure inventory data. D. Establish formal planning and design decision points during project development for reviewing multimodal infrastructure options and engage the public and internal and external stakeholders early in the scoping process. E. Develop a geodatabase consisting of planned state, regional, and local bicycle and pedestrian facilities, including shared use paths, that is accessible to all internal and external stakeholders.
PERFORMANCE MEASURES	<ul style="list-style-type: none"> • Percentage of urban state routes (non-freeway) with sidewalks or shared use paths on at least one side of the street • Percentage of urban state routes (non-freeway) with bikeways or shared use paths • Percentage of rural state bike routes with paved shoulders (min. 4 feet) • Number of eligible roadway projects granted Multimodal Access Policy design exceptions (annual and 5-year average)

3.4. PROVIDING CONNECTED + COMFORTABLE NETWORKS

As noted earlier, the planning and design of connected and comfortable pedestrian and bicycle networks has evolved over the past two decades (Figure 3-2). Today, the goal is to provide connected and comfortable places to walk, bike, and roll for people of all ages and abilities in every community, rather than focusing primarily on the needs of motorists or even just experienced adult bicyclists. Cities and towns across Tennessee recognize the importance of walking and bicycling to their communities—for economic development, tourism, and public health reasons among many others.

Since 2015 alone, TDOT has funded more than 40 community-based transportation plans aimed at expanding transportation options and economic opportunity in cities as small as Wartburg (population 899) and as large as Cookeville (population 34,706).

Similarly, during the planning process for the *Statewide Active Transportation Plan*, stakeholders identified connectivity and comfort as a top priority for improving walking and bicycling in Tennessee. Stakeholders placed particular importance on filling gaps in existing sidewalk and bicycle networks, and the need for safer walkways, bikeways, and intersections in general. Past practices have started to result in more transportation options, but for many stakeholders, the quality and quantity of walking and bicycling infrastructure remains too unsafe and too uncomfortable to use. Taken together, the strategies and actions captured in Table 3-4 call for the continued development of bicycle and pedestrian plans across Tennessee with a strong emphasis on revisiting the purpose and design of the state bicycle route system itself. They also call for strengthening coordination among state, regional, and local partners to implement plans and deliver projects that achieve local goals.

NASHVILLE, TN



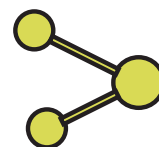


TABLE 3-4. CONNECTED + COMFORTABLE STRATEGIES AND ACTIONS

GOAL	Pedestrian and bicycle networks are connected and comfortable for all people.
STRATEGIES	<p>C1. Improve long-range network planning.</p> <p>C2. Update project selection and prioritization processes.</p> <p>C3. Review maintenance policies and agreements.</p>
ACTIONS	<p>A. Evaluate and update the state bicycle route system, its purpose, design, and maintenance.</p> <p>B. Establish a greater partnership to maintain multimodal facilities along state-owned roadways.</p> <p>C. Coordinate with transit agencies, specifically for bus stop design, bus stop placement, sidewalk connections, and pedestrian crossings.</p> <p>D. Track pedestrian and bicycle improvements in TDOT's 3-year work program to improve coordination at the local level and better track active transportation funding levels.</p> <p>E. Prioritize and select projects based on key factors such as safety, accessibility, mobility, equity, economic development, land use, and the environment.</p>
PERFORMANCE MEASURES	<ul style="list-style-type: none"> • Pedestrian commuting mode share (annual and 5-year average) • Bicycle commuting mode share (annual and 5-year average) • Percentage of MPOs, counties, and municipalities with active transportation plans • Average Level of Traffic Stress on state routes within municipal boundaries—Pedestrians • Average Level of Traffic Stress on state routes within municipal boundaries—Bicyclists

CONNECTING COMMUNITIES

Like all transportation modes, walking, bicycling, and rolling are a means to an end – connecting us to the places we want to go. Whether we are traveling to work, going to school, running errands, or visiting another community, walkways and bikeways deliver multiple benefits beyond basic accessibility and mobility. As the old saying goes, “Every trip begins and ends with a step”—or a roll.

LINKING TRANSIT

Public transit systems succeed when safe access to frequent service is available. In many cities throughout Tennessee, transit service is limited by a lack of walkways to transit stops as well as comfortable places to board. For people who live just beyond walking distances to a transit stop, bicycles, scooters, and other personal mobility devices offer a great way to travel the “first and last mile” and ride transit. Investing in safe and comfortable access to transit means greater options and opportunities.

SUPPORTING TOURISM

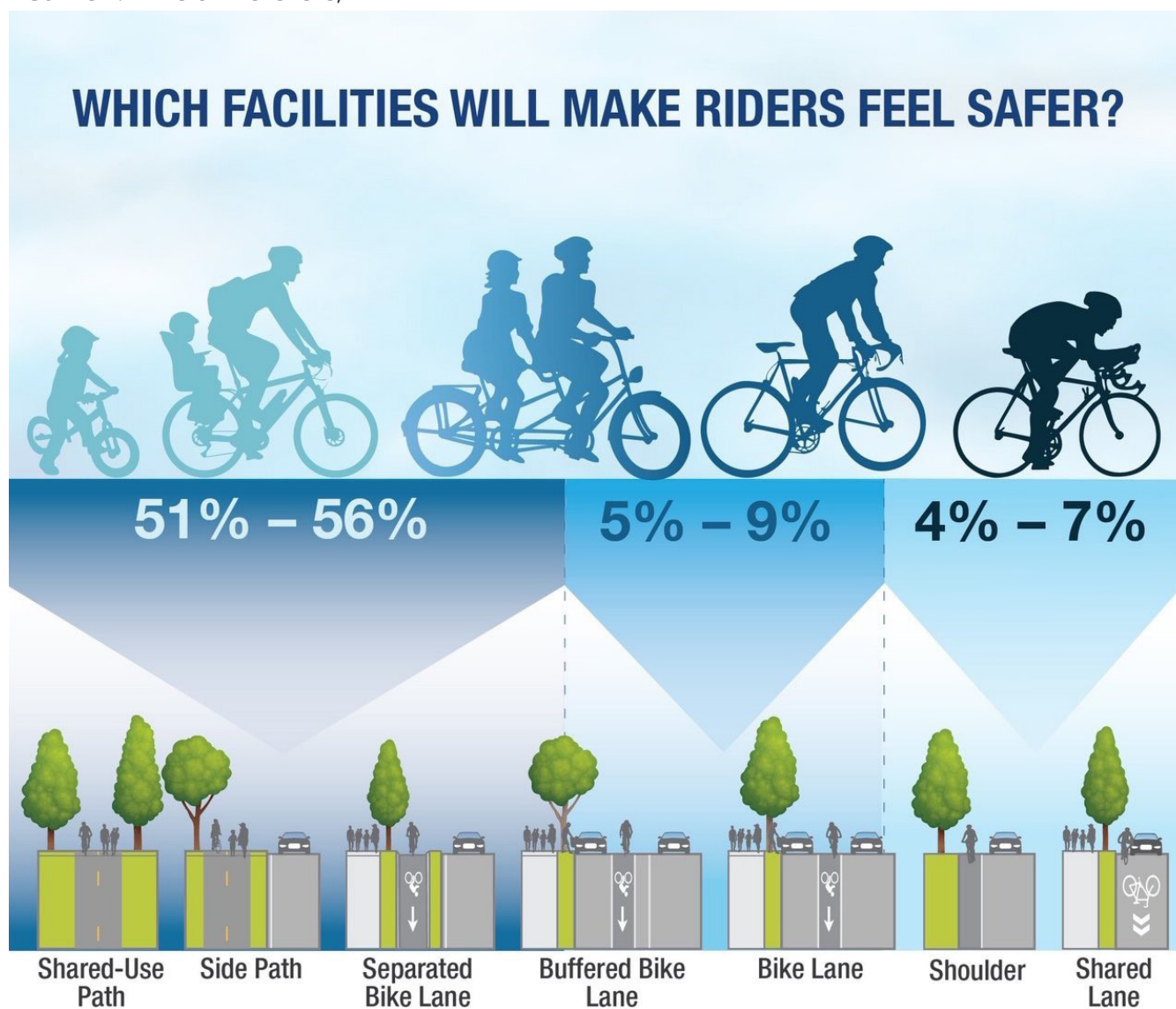
According to the Tennessee Department of Tourism Development, travel and tourism represent the state’s second largest industry by employment. And, whether you arrive by plane, bus, or car, after a long trip, most people want to get out and see the community whether it is a popular vacation destination like Pigeon Forge or a large city like Memphis and everywhere in between. Notably, a number of states have undertaken economic impact studies to measure the benefits of bicycle related tourism. Annual impacts ranged from \$261 million in Oregon to \$924 million in Wisconsin.

IMPROVING HEALTH

There are numerous health benefits associated with better active transportation networks, chief among them reduced fatalities and injuries from vehicle crashes, increased opportunities for safe and convenient physical activity, and reduced exposure to air pollution. As the U.S. Centers for Disease Control and Prevention reports, physical inactivity is a major contributor to the steady rise in rates of obesity, diabetes, heart disease, stroke, and other chronic health conditions in the United States. Moreover, community disparities exist with respect to each of these issues.

Source:
Knoxville Transportation Planning Organization

FIGURE 3-2. TYPES OF BICYCLISTS, FHWA



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4 How will we make it happen?

The plan's vision, goals, strategies, and actions set the stage for better walking, bicycling, and rolling. Change, however, will take time and occur incrementally through the hundreds of projects planned, developed, and built annually in and by communities across the state. So, how will the strategies and actions help shape transportation projects, and improve outcomes for pedestrians, bicyclists, and individuals using personal mobility devices?

There are three basic types of transportation projects that affect walking, bicycling, and rolling. Broadly speaking, they include:

- **RESURFACING PROJECTS** Projects involve pavement work and targeted safety improvements on the roadway from curb to curb or shoulder to shoulder. Opportunities to enhance active transportation infrastructure include restriping to add crosswalks and bicycle lanes.

- **OPERATIONAL AND SAFETY PROJECTS** Projects address issues such as intersection design, traffic signals, signing and striping, and minor geometric deficiencies. TDOT's Road Safety Audits and newer Pedestrian Road Safety Initiative both represent programs aimed at delivering improvements in a relatively short period of time; and
- **CORRIDOR RECONSTRUCTION AND NEW CONSTRUCTION PROJECTS** Projects include widening transportation corridors, rehabilitating and replacing bridges, reconfiguring intersections and interchanges, and building transportation corridors on new alignments. These projects represent large, long-term investments and with few exceptions will incorporate active transportation infrastructure - including the walkways, bikeways, and transit facilities that make Complete Streets.

It is important to underscore that TDOT's Multimodal Access Policy applies to all three project types. The key question is, what kind of active transportation infrastructure will they include? It is also important to recognize that many projects require coordination among multiple divisions at TDOT—including the planning, multimodal, design, traffic operations, environmental, and maintenance divisions—and close collaboration with numerous regional and local agencies. Similarly, funding for the different types of projects relies on a variety of federal, state, and local sources. **In general, as Tennessee has grown, the demand for multimodal transportation improvements has only increased placing greater importance on the effectiveness of each investment decision to help build prosperous, healthy, and resilient communities.**

4.1. PLANNING AND PROGRAMMING

Figure 4-1 outlines the typical process a project follows from initial concept to built infrastructure and operations and maintenance. Although the flow chart describes the process for reconstruction and new construction

FIGURE 4-1. PROJECT LIFE CYCLE



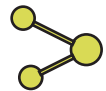
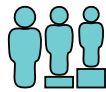


ALCOA, TN

projects, the steps, in one form or another, are generally the same for other project types. For example, all projects stem from a planning study or management system, and progress through a prioritization process or programming step before alternatives are more fully evaluated—preliminary engineering and environmental—and detailed design takes place.

Illustrating how the *Statewide Active Transportation Plan* will move from policy to implementation, Table 4-1 on the following page organizes the recommended actions around the project life cycle. TDOT divisions and external partners responsible for planning and programming have the largest role in reshaping active transportation across the state. Decisions involving data collection, public engagement, planning studies, regional and local coordination, performance measures, program funding, and project prioritization all have a substantial effect on downstream outcomes. Uncertainty in any one area can hold back and even block progress in subsequent steps. **The plan calls for implementing or making significant inroads on the 17 actions captured in Table 4-1, which all impact the planning and programming steps, during the next five years.**

TABLE 4-1. TRANSLATING ACTIONS INTO IMPROVEMENTS



ACTIONS	STEPS IN PROJECT LIFE CYCLE		
	Planning + Programming	Project Development	Operations + Maintenance
SAFE			
Develop more detailed policies, guidelines, and standards to include pedestrians, bicyclists, and other low-speed users across all project types and land use contexts (urban, suburban, rural), as well as policies and procedures for maintaining infrastructure.	•	•	•
Establish a standard set of multimodal measures to evaluate different options in all planning studies (e.g., consistency with local plans and public input, level of traffic stress, accessibility, and safety).	•	•	•
Create a quick-build program to implement safety countermeasures at high-crash locations for pedestrians, bicyclists, and other low-speed users.	•	•	•
Establish a Complete Streets program that develops projects for TDOT's 3-year work program.	•	•	
EQUITABLE			
Prioritize historically underserved community needs during planning, project development, and project selection.	•	•	•
Update existing public engagement techniques that increase participation by historically underserved communities.	•	•	•
Ensure local communities have access to technical assistance for grants, projects, and contracts in each region.	•	•	•
INTEGRAL			
Identify additional performance measures and metrics for monitoring how well the state highway system is meeting multimodal user needs and/or impacting user safety.	•		•
Remove grant barriers for communities with limited resources.	•		
Gather and report detailed multimodal infrastructure inventory data.	•		•
Establish formal design decision points during planning and project development for reviewing multimodal infrastructure options and engage the public and internal and external stakeholders early in the scoping process.	•	•	•
Develop a geodatabase consisting of planned state, regional, and local bicycle and pedestrian facilities, including shared use paths, that is accessible to all internal and external stakeholders.	•		
CONNECTED + COMFORTABLE			
Evaluate and update the state bicycle route system, its purpose, design, and maintenance.	•	•	•
Establish a greater partnership to maintain multimodal facilities along state-owned roadways.			•
Coordinate with transit agencies, specifically for bus stop design, bus stop placement, sidewalk connections, and pedestrian crossings.	•	•	•
Track pedestrian and bicycle improvements in TDOT's 3-year work program.	•		
Prioritize and select projects based on key factors such as safety, accessibility, mobility, equity, economic development, land use, and the environment.	•		•

4.2. PROJECT DEVELOPMENT

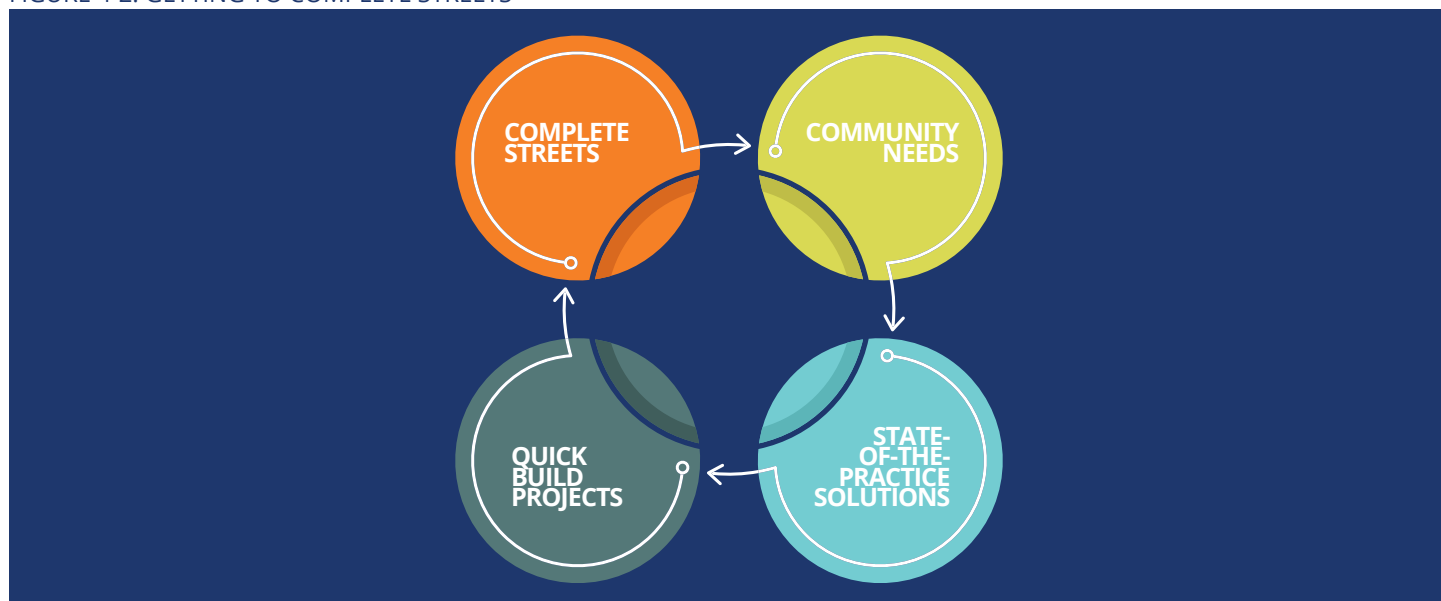
Project development activities range from preliminary engineering, environmental analysis, and design to right-of-way acquisition, including utility coordination, and construction. Because project development is most closely associated with design and construction, it tends to attract the greatest scrutiny—externally and internally—regardless of project type. Still, design, in particular, builds on findings and concepts developed in planning studies, underscoring the importance of making sure that planning processes are working the way they should first.

The recommended actions related to project development concentrate almost exclusively on the design decision making process, design guidelines, the evaluation of alternatives, and the public engagement process. As Figure 4-2 highlights, the actions work hand-in-hand, and emphasize:

- Establishing formal design decision points to discuss multimodal options and engage the public and stakeholders—especially historically underinvested populations;
- Updating guidance on best practices in pedestrian and bicycling design to meet community needs in a variety of settings—downtown main streets, commercial corridors, residential areas, and rural communities; and
- Expanding efforts to deliver state-of-the-art solutions faster.

Because the design actions reinforce one another, they can generate both short-term benefits and, significantly, long-term infrastructure and process improvements. Moreover, by working within this framework, different regions and communities across the state can pursue new design strategies and serve as powerful engines for change.

FIGURE 4-2. GETTING TO COMPLETE STREETS



4.3. OPERATIONS AND MAINTENANCE

While maintenance projects, like resurfacings, and operations projects, such as intersection improvements, may utilize their own set of tools to identify needs and develop designs, they share many of the same policies, guidelines, and standards found in planning and larger design projects. Also, since maintenance and operations activities typically take a systemwide approach to identifying and developing projects, they often overlap with regional and local planning efforts. **Enhancing data collection, system performance measures, and project prioritization criteria are all actions that will consequently play an important role in efforts to expand active transportation.**

Similar to other recommended actions, improving data collection, performance measures, and project prioritization criteria will rely heavily on coordination among different TDOT divisions and between TDOT and its external partners. For each action, keys to coordination and implementation center on ensuring data, measures, and criteria are:

- Understandable by different users;
- Implementable with available resources;
- Applicable to different project types; and
- Related to actions controlled by the participating agencies.

WHAT ARE COMPLETE STREETS?

TDOT's Multimodal Access Policy supports Complete Streets—a national effort to design and operate streets that are safe and comfortable for people of all ages and abilities. While a Complete Streets policy is often associated with walking, bicycling, and transit, its real focus is on providing a safe and comfortable transportation system for everyone—whether a driver, pedestrian, bicyclist, individual using a personal mobility device, or public transportation rider.

Complete Streets approaches impact the planning, design, operations, and maintenance of transportation corridors and balance travelers' needs based on the surrounding community context—it is not a one size fits all approach. Finally, Complete Streets policies take many forms, from individual agency policy to local ordinance. When state, regional, and local agencies all commit to Complete Streets, the transportation system works for everyone.

4.4. REGIONAL AND LOCAL PARTNERS

As TDOT works with stakeholders across Tennessee to meet active transportation needs, regional and local agencies will continue to play a leading role in making communities more walkable and bikeable. **It is at the regional and local levels where community goals and plans are developed and the groundwork is laid to support active transportation.** There are several important steps that every community can take to complement the actions outlined in this plan, and many communities have already implemented some or all of the steps, including:

- Preparing land use plans that promote efficient development patterns;
- Adopting land development regulations—zoning ordinances and subdivision regulations—that encourage mixed-use and pedestrian-friendly centers;
- Developing regional and local transportation plans that promote Complete Streets and connected transportation networks;
- Collaborating with TDOT and other state, regional, and local partners to actively manage major transportation corridors through cooperative agreements or Corridor Management Agreements; and
- Ensuring residents, business owners, and other local stakeholders have a voice in transportation planning—particularly historically underinvested populations—and community needs are identified early in any planning process.

Of course, cities and towns across Tennessee have different levels of resources and local policies and standards vary widely among them. Some regions and communities are able to remain current with national best practices in planning and design, while others need additional support to stay up to date. An important recommendation in this plan is to provide local communities with access to technical assistance for grants, projects, and contracts in each region. Notably, TDOT has a number of successful local planning and grant programs in place. The next step is to make sure all communities have equal access to them.



PIGEON FORGE, TN



BUILDING WALKABLE AND BIKEABLE COMMUNITIES

Transportation planning grants, access management guidelines, and corridor management agreements are just some of the tools TDOT has developed to support local efforts to make communities more walkable and bikeable. Ultimately, though, local actions set the stage for safe and comfortable walking, bicycling, and rolling through land use planning and land development regulations. Land use planning establishes how close residential, commercial, and civic uses are to one another while land development regulations help shape what it is like to walk, bike, or roll along a street. Best practices in land use policies and land development regulations include:

- Walkable subdivision regulations;
- Form-based codes;
- Mixed-use zoning;
- Sidewalk requirements;
- Reduced front yard setbacks;
- Parking located in the rear or on the side;
- Reduced parking requirements in designated centers;
- Development incentives for public benefits, such as plazas, parks, and trails;
- Access management standards; and
- Landscape requirements.

When local land use planning promotes walkable and bikeable development patterns, then transportation investments can strategically support a community's vision. In effect, private development decisions can work hand-in hand with public infrastructure improvements to build better places to walk, bike, and roll for everyone.

5 What happens next?

Over the next five years, TDOT will work with internal and external stakeholders to advance the actions in the *Statewide Active Transportation Plan*. While individual actions may take more than five years to implement fully, plan participants expressed a strong desire for more opportunities today to walk, bike, and roll safely and comfortably in Tennessee—for people of all ages and abilities. An important takeaway from the plan is that many steps have already been taken to make active transportation safer and more accessible, especially during the past ten years. The challenge and opportunity for all interested individuals and organizations is to write the next chapter on walking, bicycling, and rolling in the state.

The vision for active transportation is clear—in Tennessee, everyone can walk, bicycle, or roll to the places they need to go using a safe and reliable transportation system. And, the plan's goals, strategies, and actions are ambitious but achievable (Table 5-1). Additionally, the proposed performance measures, when routinely monitored and reported, will let us know if we are making progress on the goals, need to do more, or alter course.

Finally, the *Statewide Active Transportation Plan* fully recognizes that implementation and success will require a partnership between TDOT, local and regional agencies, residents and businesses, and advocacy groups to make transportation safer and more equitable for everyone. Economic development and quality of life underpin TDOT's mission statement and similarly fuel the work of communities across the state. As the plan is implemented, investments in walking and bicycling will continue to support growth and development and help transform neighborhoods, commercial corridors, and business districts throughout Tennessee.

TABLE 5-1. SUMMARY OF GOALS, STRATEGIES AND ACTIONS



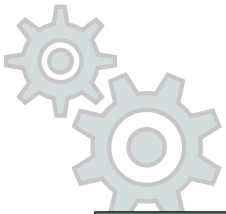
SAFE

STRATEGIES	ACTIONS
<p>S1. Plan, design, operate, and maintain corridors for all users.</p> <p>S2. Prioritize locations with high-risk roadway features.</p>	<p>A. Develop more detailed policies, guidelines, and standards to include pedestrians, bicyclists, and other low-speed users across all project types and land use contexts (urban, suburban, rural), as well as policies and procedures for maintaining infrastructure.</p> <p>B. Establish a standard set of multimodal measures to evaluate different options in all planning studies (e.g., consistency with local plans and public input, level of traffic stress, accessibility, and safety).</p> <p>C. Create a quick-build program to implement safety countermeasures at high-crash locations for pedestrians, bicyclists, and other low-speed users.</p> <p>D. Establish a Complete Streets program that develops projects for TDOT's 3-year work program.</p>



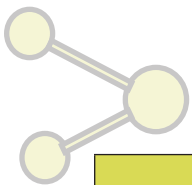
EQUITABLE

STRATEGIES	ACTIONS
<p>E1. Support historically underserved communities through transportation investments.</p> <p>E2. Update and expand public engagement processes.</p> <p>E3. Provide local guidance and technical support for planning, design, and grant management.</p>	<p>A. Prioritize historically underserved community needs during project development and project selection.</p> <p>B. Update existing public engagement techniques that increase participation by historically underserved communities.</p> <p>C. Ensure local communities have access to technical assistance for grants, projects, and contracts in each region.</p>



INTEGRAL

STRATEGIES	ACTIONS
<ul style="list-style-type: none">I1. Evaluate system performance.I2. Understand where people walk and bicycle.I3. Coordinate closely at project milestones.I4. Share data across agencies.I5. Support ongoing and advanced education and training.I6. Support communities with limited resources through grant opportunities.	<ul style="list-style-type: none">A. Identify additional performance measures and metrics for monitoring how well the state highway system is meeting multimodal user needs and/or impacting user safety.B. Remove grant barriers for communities with limited resources.C. Gather and report detailed multimodal infrastructure inventory data.D. Establish formal planning and design decision points during project development for reviewing multimodal infrastructure options and engage the public and internal and external stakeholders early in the scoping process..E. Develop a geodatabase consisting of planned state, regional, and local bicycle and pedestrian facilities, including shared use paths, that is accessible to all internal and external stakeholders.



CONNECTED + COMFORTABLE

STRATEGIES	ACTIONS
<ul style="list-style-type: none">C1. Improve long-range network planning.C2. Update project selection and prioritization processes.C3. Review maintenance policies and agreements.	<ul style="list-style-type: none">A. Evaluate the state bicycle route system, its purpose, design, and maintenance.B. Establish a greater partnership to maintain multimodal facilities along state-owned roadways.C. Coordinate with transit agencies, specifically for bus stop design, bus stop placement, sidewalk connections, and pedestrian crossings.D. Track pedestrian and bicycle improvements in TDOT's 3-year work program to improve coordination at the local level and better track active transportation funding levels.E. Prioritize and select projects based on key factors such as safety, accessibility, mobility, equity, economic development, land use, and the environment.

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ALGOOD, TN

APPENDIX

LEARN MORE ABOUT WALKING, BICYCLING, AND ROLLING

GLOSSARY OF COMMONLY USED ACTIVE TRANSPORTATION TERMS

Accessible Pedestrian Signal (APS) A type of pedestrian signal at signalized intersections that communicates crossing phases in a non-visual manner for purposes of serving visually-impaired pedestrians.

Active Transportation Mode of transportation that includes walking, bicycling, and rolling devices (including human-powered, self-propelled, and low-speed electric devices). This mode is inherently linked to public transportation as every trip begins and ends with travel by foot, bicycle, and/or rolling device.

American Disabilities Act (ADA) Establishes equal opportunity requirements for persons with disabilities, including ensuring newly-constructed transportation facilities are accessible for all users.

Bicycle (Bike) Share A publicly-available service providing shared use bicycles to users on a short-term basis, including both docked and dockless systems.

Bicycle Level of Service (BLOS) A roadway scoring methodology for evaluating on-road comfort of bicyclists based on geometric and traffic conditions.

Bikeway A facility designed for bicycle travel that specifically designates space for bicyclists, separate from vehicular traffic.

Buffer A spatial or physical barrier between an active transportation facility and vehicular traffic.

Crosswalk A part of the roadway for pedestrians to cross a roadway, either at an intersection (marked or unmarked by pavement striping) or mid-block (i.e., a marked crossing between intersections).

Curb Extension Also known as bulb-outs or neckdowns, a curb extension physically and visually narrows a roadway by reducing the curb-to-curb width of a roadway or a roadway's curb radii at intersections. Curb extensions are often used to reduce traffic speeds, either along a roadway or at an intersection, as well as reduce pedestrian crossing distances.

Curb Ramp A ramp providing a seamless transition between sidewalk and crosswalk (i.e., roadway surface). Curb ramps are critical components to providing safe access for pedestrians with mobility challenges, especially for wheeled devices.

Design Speed A desired operating speed for users that informs geometric features of a roadway or shared use paths.

Detectable Warning A standardized surface feature for walking surfaces to warn pedestrians with vision impairments of boundaries between walkways and streets.

Level of Traffic Stress (LTS) A roadway scoring methodology to evaluate the level of stress (discomfort) an average bicyclist might encounter on either an on- or off-road bicycle facility as it relates to the adjacent volume and speed of traffic.

Micromobility An evolving mode of low-speed transportation that includes a range of personal and shared mobility devices, including stand up electric scooters, moped-style scooters, as well as human-powered and electric bike shares.

Mid-block Crosswalk A signalized or unsignalized marked crosswalk between intersections providing a convenient and safe crossing for pedestrians in areas without frequent intersections.

Pedestrian Hybrid Beacon (PHB) A traffic control device (signal) activated by non-motorized users to control traffic at a non-motorized mid-block crossing. PHBs are formerly known as High-Intensity Activated CrossWalk signals (HAWK).

Pedestrian Level of Service (PLOS) A scoring methodology used to assess safety and comfort levels of pedestrian facilities based on operational conditions of pedestrian traffic and adjacent vehicular.

Pedestrian Pathway Any sidewalk or path that is used exclusively by pedestrians.

Pedestrian Refuge (Median) Island A median with a protected refuge area for crossing pedestrians creating a two-stage crossing for a safer and more comfortable crossing across multi-lane roadways.

Pedestrian Signal Devices used at intersections to denote signal phases when it is safe for pedestrians to cross the street.

Personal Mobility Device An umbrella term used for low-speed devices used for personal transportation, including, but not limited to, powered wheelchairs, scooters, bicycles, and skateboards.

Public Rights-of-Way Accessibility Guidelines (PROWAG) A set of guidelines developed under the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) that addresses topical areas not fully covered by ADA standards, such as sidewalk, crosswalk, and curb ramp design.

Road Diet The reconfiguration or reduction of the number and/or width of motorized vehicle lanes to improve safety and operations for all roadway users.

Rumble Strip A textured or grooved pavement treatment designed to create noise and vibration to alert motorists of a need to change their path or speed. Gapped, or non-continuous, rumble strip designs should be used to allow bicyclists to safely navigate between paved shoulder and travel lane.

Shared Mobility Device (SMD) Transportation devices that are offered for short-term rental within the public right-of-way by private companies, including bike shares, stand up electric scooters, and moped-style scooters.

State Route A roadway that is maintained by a state.

Traffic Calming A range of measures aimed at reducing the negative impacts of vehicular traffic on livability along a roadway, alter driver behavior (reduce vehicle speeds), and/or improve the conditions for non-motorized users.

Travel Lane The portion of the roadway intended for the movement of vehicles, exclusive of shoulders.

U.S. Bicycle Route System (USBRs) A developing national network of long-distance bicycle routes connecting urban and rural communities across the United States. Routes are officially designated by the American Association of State and Highway Transportation Officials (AASHTO) after all the local jurisdictions along a route within a state have provided documented resolutions of support.

Vulnerable Roadway User Roadway users most at risk for severe injury/death in the instance of a collision with motor vehicle. These users include pedestrians, bicyclists, and motorcyclists.

LIST OF COMMONLY USED ACTIVE TRANSPORTATION ACRONYMS

3R	Restoration, Resurfacing, or Rehabilitation Project
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADA	American Disabilities Act of 1990
ADT	Average Daily Traffic
BLOS	Bicycle Level of Service
CMF	Crash Modification Factor
DOT	Department of Transportation
ETRIMS	Enhanced Tennessee Roadway Information Management System
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
GIS	Geographic Information System
HCM	Highway Capacity Manual
HSIP	Highway Safety Improvement Program
LOS	Level of Service
LTS	Level of Traffic Stress
LPI	Leading Pedestrian Interval
LRTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
MUTCD	Manual of Uniform Traffic Control Devices
NACTO	National Association of City Transportation Officials
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
PHB	Pedestrian Hybrid Beacon
PLOS	Pedestrian Level of Service
PROWAG	Public Rights-of-Way Accessibility Guidelines
PRSI	Pedestrian Roadway Safety Initiative
RPO	Rural Planning Organization

RRFB Rectangular Rapid Flash Beacon
SHSP State Highway Safety Plan
STIP Statewide Transportation Improvement Program
TDOT Tennessee Department of Transportation
TIP Transportation Improvement Plan
TOD Transit-Oriented Development
TRB Transportation Research Board
USDOT United States Department of Transportation

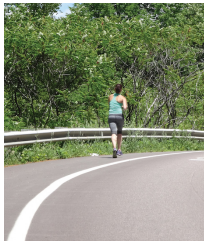
OVERVIEW OF ACTIVE TRANSPORTATION FACILITY TYPES

PEDESTRIANS



Sidewalks

Sidewalks are pedestrian paths that provide people with places to walk, bicycle, or roll within the public right-of-way separate from motor vehicles.



Paved Shoulder

Pedestrian use of paved shoulders is not ideal given the lack of separation from adjacent traffic and should not be considered an alternative to a sidewalk; however, paved shoulders might be used as a pedestrian safety improvement where edge of roadway space may be limited.



Marked and Unmarked Crosswalks

Marked crosswalks, denoted by striping on the roadway, indicate preferred locations for pedestrians to safely cross a roadway. Unmarked crosswalks are present at most roadway intersections regardless of striping or signage, meaning vehicles must yield to pedestrians who have entered these areas of a roadway.



Curb Ramps

Curb ramps provide a transition between the sidewalk and roadway for people who are using a wheelchair, strollers, walkers, crutches, bicycles, and for pedestrians who have mobility impairments and cannot step onto the curbed sidewalk.

BICYCLISTS



Separated Bicycle Lanes

Separated bicycle lanes are distinguished by a physical element in the buffer space, such as flexible delineators, curbing, parking, or plantings. These facilities are also referred to as “cycle tracks” or “protected bicycle lanes”.



Buffered Bicycle Lanes

Buffered bicycle lanes are conventional bicycle lanes with a designated buffer space of 18 inches or greater between the bicycle lane and travel lane.



Bicycle Lanes

A conventional bicycle lane is located parallel to vehicle travel lanes, however, without a buffer or physical barrier to separate the bicyclist from the travel lane.



Shared Roadways (Signed Shared Roadway and Wide Outside Lanes)

Shared roadways are most appropriate on low-speed and low-volume roadways, regardless of the context, and are often coupled with traffic speed countermeasures.



Paved Shoulders

Providing a paved shoulder outside of the travel lane, even if not specifically designated for bicycle use, can significantly improve the safety and comfort of a bicyclist in a rural setting. These are not considered appropriate facilities for urban and suburban contexts.

SHARED USE



Shared Use Path

Shared use path is an umbrella term for sidepaths and greenways. These two-way facilities pathways are dedicated to active transportation and are separate from the roadway. Sidepaths lie within a roadway's right-of-way, while a greenway falls outside, most often within land easements or along water features.



Overpasses/Underpasses

These grade-separated structures assist active transportation users in overcoming a barrier, whether natural or man-made. Barriers include railroads, freeways, other high speed and/or high-volume roadways, and waterways.